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## The Progressive Farmer.

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### FERTILIZERS: MATERIALS SUPPLYING NITROGEN.

In last week's Progressive Farmer we discussed the nitrate form of nitrogen. This week we are to consider the organic materials containing nitrogen. These are of two classes: Vegetable products and animal products.

Cottonseed meal is one of the very best and most important of the vegetable organic products furnishing nitrogen; especially is this the case in the South. Good meal contains 6.6 per cent of nitrogen, or 132 pounds in the ton. Expressed in terms of ammonia there is in meal about 8 per cent, of 160 pounds of ammonia in a ton. There is also in it about 3 per cent of phosphoric acid, of which about 2.5 per cent is available to laboratory fertilizer methods, and about 2 per cent of potash, 1.5 per cent of which is soluble in water.

As stated in last week's paper, materials like cottonseed meal, in the process of decay, have their nitrogen changed, by the aid of bacteria in the soil, to nitrates when it is in the condition best suited to the needs of plants. An organic material furnishing nitrogen, then, is valuable as a fertilizer in proportion to its content of nitrogen and the rapidity with which it decays in the soil, or rather the rate of decay will determine the quickness of action in an important consideration, but with crops occupying the land during the greater portion or all of the growing season, it is better to have fertilizer that will become available more slowly so as to feed the plants till maturity. Cottonseed meal decays fairly rapidly, but will last for a considerable length of time and is not nearly so available as sulphate of ammonia and nitrate of soda.

#### COTTON SEED.

Cottonseed are used to some extent as fertilizer by farmers, but are never employed by fertilizer manufacturers in mixing fertilizers. They contain on an average 3.1 per cent of nitrogen, 1.3 per cent of phosphoric acid, and 1.2 per cent of potash, or in a ton there are sixty-two pounds of nitrogen, twenty-six pounds phosphoric acid and twenty-four pounds of potash. Seed decay slowly than meal, and hence feed the plant through a longer period of time.

#### DRIED BLOOD.

Dried blood is the richest in nitrogen of any of the animal products used for fertilizer. It is obtained from the slaughter-houses, where the blood of the animals killed is collected and dried. There are two grades of it—"red" or "high grade" dried blood, which contains from 12 to 14 per cent of nitrogen, or two hundred and forty to two hundred and eighty pounds to the ton, and "black" or "low grade" dried blood, which contains 6 to 12 per cent of nitrogen or one hundred and twenty to two hundred and forty pounds to the ton. The former of these, or red dried blood, is not only richer in nitrogen, but its

nitrogen is more available, since the red blood decays or rots more rapidly than the black variety, which is harder and tougher on account of having been dried faster and at a higher temperature. Blood is the quickest acting source of animal nitrogen, and in this respect is about the same as cottonseed meal, being, if any difference, somewhat quicker than meal.

#### TANKAGE.

Tankage is the waste parts of animal bodies, which cannot be made use of in any other way at the great slaughtering and packing establishments. These parts, useless for other purposes, are dried, usually in large tanks, and ground. Tankage is quite variable in composition on account of the varying amounts of the different parts of animals, which find their way into the refuse pile. The better grade if it is known as "concentrated tankage" and contains 10 to 12 per cent of nitrogen, or two hundred to two hundred and forty pounds to the ton, and also a small amount of phosphoric acid, not usually over 2 or 3 per cent. Low grade or crushed tankage contains a good deal of bone, which lowers the nitrogen content to from 4 to 9 per cent, or eighty to one hundred and eighty pounds to the ton, and increases the phosphoric acid to from eight to 14 per cent. The phosphoric acid in tankage is mostly insoluble, but is more available than that in raw phosphate rock and less so considerably than the phosphoric acid in acid phosphate.

#### DRIED FISH SCRAP.

Dried fish scrap and ground fish are the wastes, first, from the packing and canning establishments, in which cases it is largely offal, skin and bones and very variable in composition; and, second, the residue from the extraction of oil from fish. This latter product is fairly uniform in composition, and contains 7 to 9 per cent of nitrogen, or one hundred and forty to one hundred and eighty pounds to the ton, and in addition it has 6 to 8 per cent of phosphoric acid. Fish scrap, when well ground, decays rapidly, and is a good source of nitrogen. Considerable quantities of it are sold in this State.

The preceding materials, cottonseed meal, dried blood, tankage and fish scrap are the main ones which furnish nitrogen in what is called the organic form. Before the nitrogen which they contain can act as food for plants, the materials must rot and allow their nitrogen to be broken loose from its combinations in them and to take on the new form, by the aid of the bacteria of the soil, of nitrates. The rapidity, then, of the action of organic material as fertilizers depends on their rate of decay.

(The next article will contain a discussion of the materials supplying phosphoric acid.)

B. W. KILGORE.

A New York lawyer tells the following story of an old darkey preacher in North Carolina, who prefaced the passing of the collection plate with: "Salvation's free, brethren, salvation's free! It don't cost nothin'! But we have to pay the freight on it. We will now pass aroun' the hat, an' collect the freight charges."

### MURIATE AND KAINIT AS SOURCES OF POTASH.

In a recent issue (February 2), "D L." in discussing the mixing of fertilizers, refers to the use of kainit in the composts in my article on "Composts and Composting," and asks if there is any objection to muriate of potash as the source of potash for cotton, corn and general farm crops. There is not. As far as results have been obtained, they are to the effect that one pound of actual potash in muriate is just as effective in increasing crop production as one pound in kainit. Kainit contains on an average 12.5 per cent of potash and muriate, of the best grade, 50 per cent. It then requires four tons of kainit to furnish the amount of potash that is contained in one ton of muriate and the one ton of muriate will give as much increase in growth in crops as the four tons of kainit. Where the one ton of muriate can be had for the same price as four tons of kainit the muriate has the advantage of saving the freight on three tons of material and the extra expense of hauling and putting them out. The muriate is then the more desirable under these conditions and for the reasons given.

Kainit is generally to be preferred in the compost heap because the salt it contains—about 40 per cent—helps to keep the mixture moist and reduces the danger of heating and the loss of ammonia from this cause. Salt attracts and holds water. When in a bulky mixture a bulky material like kainit has some advantage in getting more uniformity distributed through the compost heap.

For cotton on land that is at all subject or likely to produce rust, kainit is the better source of potash. In fact, it should always be used under these conditions, as it reduces and often prevents rust entirely, especially if the season be not a favorable one for rust. Outside of the benefits from drainage and thorough preparation of the land there is no means generally known outside of kainit in the fertilizer or salt, to which the beneficial effects of kainit may be due, for reducing or preventing rust in cotton.

Aside from these cases, the use of kainit in the compost heap and for cotton liable to rust, the potash material should be used which can be had for the least cost, including in this the original purchase price, freight, and the comparative expense of putting out bulky and concentrated materials.

This does not include tobacco fertilizers, the potash of which should come from high grade sulphate of potash in preference to either muriate or kainit.

Muriate of potash is better for Irish potatoes than kainit and some experiments show that the high-grade sulphate produces a smoother and firmer potato than the muriate, but no more potatoes.

B. W. KILGORE.

Do not worry, eat three square meals a day, say your prayers, be courteous to your creditors, keep your digestion good, steer clear of biliousness, exercise, go slow, and go easy. Maybe there are other things that your special case requires to make you happy, but my friend, these I reckon will give you a good lift.—Abraham Lincoln.